Drinking Water Surveillance Program

NORTH BAY WATER SUPPLY SYSTEM

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NORTH BAY
WATER SUPPLY SYSTEM

DRINKING WATER SURVEILLANCE PROGRAM

ANNUAL REPORT 1988

FEBRUARY 1990

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EXECUTIVE SUMMARY.

DRINKING WATER SURVEILLANCE PROGRAM

NORTH BAY WATER SUPPLY SYSTEM
1988 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 52 plants are being monitored.

The North Bay Water Supply System is a pumping station that adjusts alkalinity, disinfects and fluoridates water from Trout Lake before distribution. This plant serves a population of approximately 50,000 and has a design capacity of 24 x 1000 m^3/day.

Water samples from two distribution sites were taken on a monthly basis and analyzed for approximately 160 parameters beginning in March. The raw and treated water at the pumping station was not sampled. Parameters were divided into the following groups Bacteriological, Inorganic and Physical(Laboratory Chemistry, Field Chemistry and Metals) and Organics (Chloroaromatics, Pesticides and PCB, Specific Pesticides and Volatiles). Phenolics, Polynuclear Aromatic Hydrocarbons and Chlorophenols were not analysed.

A summary of results is shown in Table 1.

Inorganic and Physical parameters (Laboratory Chemistry, Field Chemistry and Metals) were below any applicable health related ODWOs.

Of approximately 110 Organic parameters tested for on a monthly basis, none exceeded health related guidelines.

During 1988 the limited DWSP sampling results indicated that the distributed water from the North Bay Water Treatment Plant was a good quality water.

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP

SUMMARY TABLE BY SCAN

	SCAN	SITE 1 TESTS	SITE 1 POSITIVE	SITE 1 %POSITIVE	SITE 2 TESTS	SITE 2 POSITIVE	SITE 2 %POSITIVE	SITE 3 TESTS	SITE 3 POSITIVE	SITE 3 %POSITIVE
	BACTERIOLOGICAL	36	12	33	41	17	41	9	5	55
	CHEMISTRY (FLD)	116	116	100	79	79	100	28	28	100
	CHEMISTRY (LAB)	379	335	88	272	234	86	107	98	91
	METALS	517	227	43	376	154	40	141	63	44
	CHLOROAROMATICS	140	0	0	112	0	0	42	0	0
	PESTICIDES & PCB	341	0	0	260	0	0	102	0	0
	SPECIFIC PESTICIDES	0	0	0	0	0	0	0	0	0
	VOLATILES	224	21	9	166	16	9	87	10	11
TOTAL		1753	711		1306	500		516	204	

NO HEALTH RELATED GUIDELINES WERE EXCEEDED

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

DRINKING WATER SURVEILLANCE PROGRAM

NORTH BAY WATER SUPPLY
1988 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. Currently, 52 plants are being monitored.

The DWSP was initiated on the North Bay Water Supply in March of 1987. An Annual Report was published for 1987 (ISSN 0840-5212).

This report contains information and results for 1988.

PLANT DESCRIPTION

The North Bay Water Supply System is a pumping station that adjusts for alkalinity, disinfects and fluoridates water from Trout Lake before distribution. The pumping station has a design capacity of 30 x 1000 m^3/day and flows on day of sampling ranging from 24.1 x 1000 m^3/day to 36 x 1000 m^3/day. The supply serves approximately 50,000 people.

The plant location is shown in Figure 1. General plant information

is presented in Table 2.

METHODS

Raw and treated water at the pumping station was not sampled in 1988 because the sample lines do not meet DWSP requirements.

Samples were obtained from two DWSP approved locations;

i) Distribution System - Site 1 - This house is approximately 2 kilometers from the plant. Water was sampled through a copper sample line at the basement laundry tap.

ii) Distribution System - Site 2 - This house is approximately 9 kilometers from the plant. Water was sampled through a copper sample line at the kitchen sink tap. Sampling at this site was discontinued in August.

iii) Distribution System - Site 3 - This house is approximately 6 kilometers from the plant. Water was sampled through a copper sample line at the kitchen sink. Sampling at this site was started in October 1988.

At the distribution system locations two types of samples were obtained: a standing and a free flow. The standing sample consisted of water that had been in the household plumbing and service connection for a minimum of six hours. These samples are

FIGURE 1

DRINKING WATER SURVEILLANCE PROGRAM

SITE LOCATION MAP

NORTH BAY WATER SUPPLY

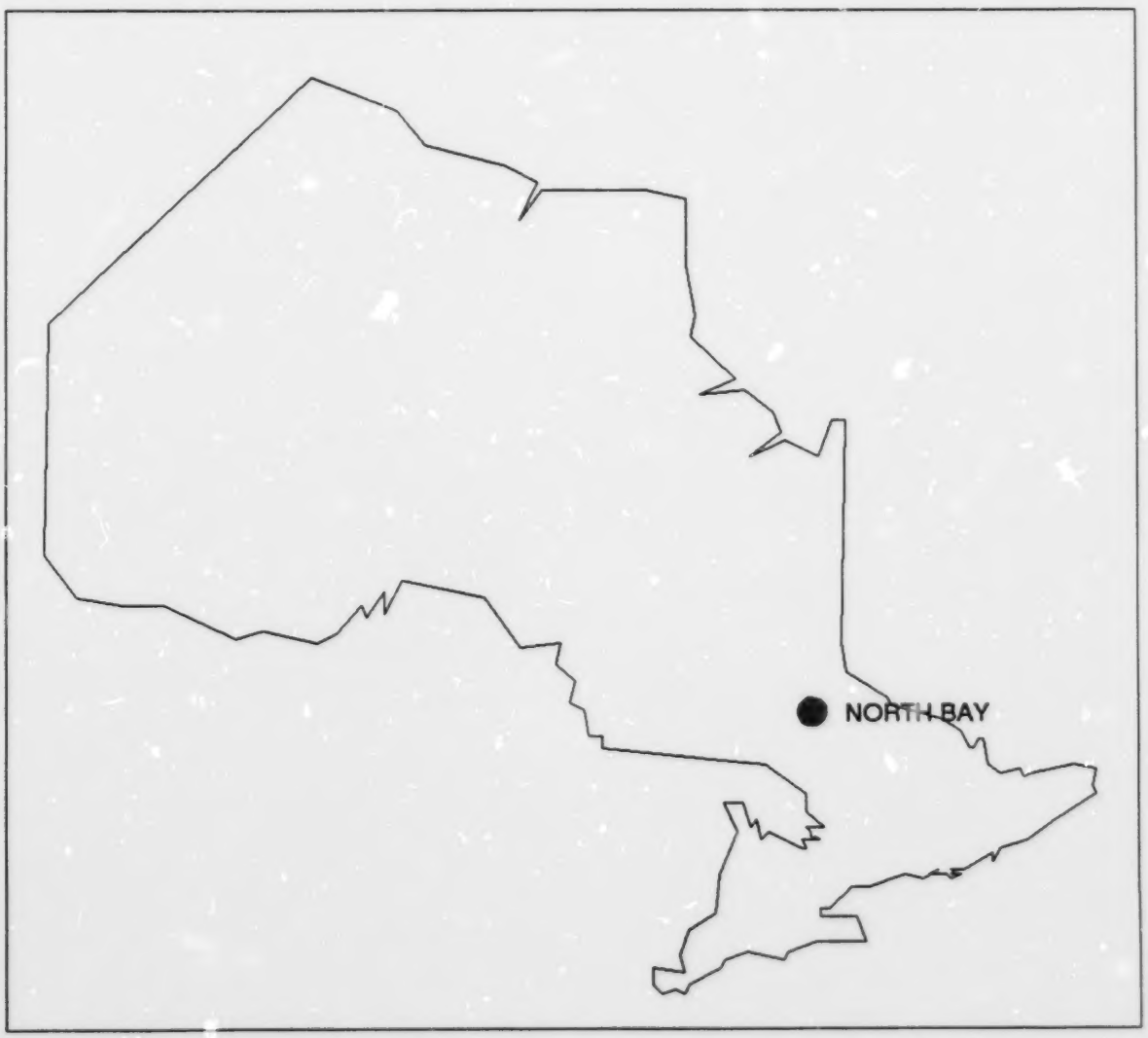

TABLE 2

DRINKING WATER SURVEILLANCE PROGRAM ANNUAL REPORT

GENERAL INFORMATION

NORTH BAY WATER SUPPLY SYSTEM

LOCATION:	248 LAKESIDE DRIVE NORTH BAY, ONTARIO P1B 3E3 (705-474-3417)
SOURCE:	RAW WATER SOURCE - TROUT LAKE
DESIGN CAPACITY:	30 (1000 M^3/DAY)
OPERATION:	MUNICIPALITY
PLANT SUPERINTENDENT:	B. WINTON
MINISTRY REGION:	NORTHEAST
DISTRICT OFFICER:	J.R. HARMAR

MUNICIPALITY SERVED	POPULATION
NORTH BAY	50,000

used to make an assessment of the amount by which the levels of inorganic compounds and metals may be changed on standing due to leaching from (or deposition on) the plumbing system. The only analyses carried out on the standing samples therefore, are General Chemistry and Metals. The free flow sample represented fresh water from the distribution main that had been flowing at the sample tap for five minutes before the sample was taken.

Stringent DWSP sampling protocols were followed to ensure that all samples were taken in a uniform manner.

Sample day flow, treatment chemical dosages and Field Chemistry measurements such as Turbidity, Chlorine Residuals, pH and Temperature were recorded on the day of sampling and were entered on the DWSP data base as submitted.

RESULTS

The North Bay Water Supply distribution system was sampled for approximately 160 parameters on a monthly basis in 1988. No samples were taken in September and the December samples were mislabeled at the laboratory . The water at the pumping station was not sampled.

Phenolics, Polynuclear Aromatic Hydrocarbons, Specific Pesticides and Chlorophenols scans were not analyzed. As a result of an

unforeseen emergency the laboratory capacity was exceeded and analysis for volatiles could not be carried out when the samples were received. Since analysis for volatiles is no longer valid after four weeks of storage, volatile results for January and February are not available.

Table 3 contains information on the sample day retention time, flow rate and treatment chemicals used and their associated dosages.

Table 4 is a summary break-down of the number of water samples analysed for by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment (MOE) laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analysed in the DWSP.

Associated guidelines and detection limits are also supplied on

tables 5 and 6. Parameters are listed alphabetically within each scan.

DISCUSSION

General

Water quality is judged by comparison with the Ontario Drinking Water Objectives (ODWOs) as defined in the 1984 publication (ISBN 0-7743-8985-0). The Province of Ontario has health related and aesthetic objectives for 49 parameters, these are are currently under review. When an ODWO is not available guidelines/limits from other agencies are consulted. The Parameters Listing System (PALIS) recently published (ISBN 0-7729-4461-X) by the MOE catalogues and keeps current over 1750 guidelines for 650 parameters from agencies throughout the world.

Although some of the parameters measured on DWSP may be present in the raw and treated water as a result of pollution, many of the compounds detected are naturally occuring or are treatment by-products.

Plant operational personnel address occurrences of taste and odour or biological water quality parameters. The DWSP does not assess these aspects of the water supply.

As stated under Results, traces do not indicate quantifiable

values, as defined by established MOE Laboratory analytical reporting protocols. While they can be useful in trend analysis or confirmation of the presence of a specific contaminant that is repeatedly detected at these levels, the occasional finding of a trace level of a contaminant is not considered to be significant. **DISCUSSION OF GUIDELINES AND LIMITS THEREFORE, IS ONLY CONDUCTED ON POSITIVE RESULTS.**

Bacteriology

Positive results for the Bacteriology scan were present eleven times in the Site 1 water, seventeen times in the Site 2 water and three times in the Site 3 water. The positive parameters were Standard Plate Count, Total Coliform and/or Total coliform Background and Presence/Absence test.

Coliforms were present in the Presence/Absence test for the July Site 1 water and the March and August Site 2 water. Coliforms were also detected at 7/100 mL by the membrane filtration test in the August sample. Fecal Coliforms were present in the March Site 2 water. The District Officer was notified on all occasions.

Standard Plate Count is a test used to supplement routine analysis for Coliform bacteria. The limit for Standard Plate Count (at 35°C after 48 hours) from the ODWOs is 500 organisms/mL based on a geometric mean of 5 or more samples. High Standard Plate Counts

were present in the November Site 1 water and the July Site 2 water. While no indicators of unsafe water were detected at this time, the high Standard Plate Count may be indicative of a deterioration in conditions in the distribution system. A total Chlorine Residual of at least 0.05 mg/L was detected in the samples.

Guidelines for bacteriological sampling and testing of a supply are developed to maintain a proper supervision of its bacteriological quality; the routine monitoring program usually requires the taking of multiple samples in a given system. Full interpretation of bacteriological quality cannot be made on the basis of single samples. Further, bacteriological limits were developed in acknowledgement that the presence of coliforms may be detected due to their non-uniform distribution throughout the distribution system and the fact that their enumeration is subject to considerable variation. For these reasons, the occasional finding of low numbers of coliform organisms is not unexpected. Routine bacteriological monitoring, as outlined in the ODWOs is carried out by the operating authority.

Inorganic and Physical Parameters

Laboratory and Field Chemistry

The results for Laboratory Chemistry and Field Chemistry scans were below applicable health related ODWOs.

Colour values exceeded the aesthetic ODWO of 5 True Colour Units (TCU) in fifteen of the distribution system Site 1 standing and free flow samples, twelve Site 2 waters and four Site 3 waters. Colour in drinking water may be due to the presence of natural or synthetic organic substances as well as certain metallic ions.

The Langelier Index is used extensively in estimating the corrosion potential of water. An increasingly negative index indicates the increasing possibility of corrosion. It is considered sound engineering practice to maintain a slightly positive Langelier Index. Although Table 3 indicates that Sodium Carbonate is added for alkalinity adjustment, the Langelier Index for North Bay is consistently negative.

As part of the treatment plant process Hydrofluosilicic acid is added to the treated water (Table 3). Where fluoridation is practised, the Fluoride concentration recommended in the ODWO is 1.2 mg/L, plus or minus 0.2 mg/L. This level was maintained in three out of the twenty samples of distributed water, as can be observed in the Fluoride values.

Metals

Elevated levels of Copper, Nickel, Lead and Zinc were detected in the standing samples as compared to the free flow distribution samples, indicating that small quantities of these metals were

leached from the household plumbing as the water stood overnight. The Langelier Index indicates that this might be expected.

The Lead levels in the July standing sample from Site 1 are high; the Nickel value is also elevated in the October sample. Samples from this location always show higher levels for these metals in the standing samples than those from Site 2 or Site 3 (indicating the possibility of a lead service connection).

Organic

Chloroaromatics

The results of the Chloroaromatics group showed that no Chloroaromatics were detected.

Pesticides and PCB (Polychlorinated Biphenyl)

The results of the Pesticides and PCB scan showed that no PCBs were detected and that two pesticides were detected:

Alpha BHC

Lindane

There are several isomers of BHC (Benzene Hexachloride); gamma BHC is the active ingredient of the pesticide Lindane, while alpha BHC is the isomer most predominantly found in surface waters of the Great Lakes basin as indicated in results from other water supplies on DWSP.

Alpha BHC was detected at trace levels, eight times in the Site 1 water, seven times in the Site 2 water and three times in the Site 3 water.

Lindane was detected at trace levels, three times in the Site 1 water and once in the Site 2 water.

Volatiles

Within the Volatile scan three parameters, other than Trihalomethanes (THMs), were detected:

Toluene

Ethylbenzene

Styrene

Toluene was detected at trace levels, twice in the Site 1 water and Site 2 water and once in the Site 3 water. The detection of toluene at low, trace levels is a laboratory artifact derived from the analytical methodology. The purge-and-trap analytical technique depends on the purging of the volatile organics in the water sample with helium gas onto a Tenax trapping column. The volatile materials are subsequently thermally desorbed, separated and quantified. Tenax, a toluene-like polymeric material, tends to decompose sporadically upon heating into toluene and other aromatic componenets (ethylbenzene and xylene) giving instrument blanks in the order of 0.05 ug/L.

The detected trace levels of Styrene are also considered to be laboratory artifacts due to the outgassing of monomeric styrene from the polystyrene shipping containers. The sporadic background levels from this source are in the order of 0.05 ug/L.

Ethylbenzene was detected at trace levels, four times in the Site 1 water, twice in the Site 2 water and once in the Site 3 water.

The volatiles listed above are typically found on an occasional basis at other water supplies included on the DWSP, usually at trace levels.

THMs are acknowledged to be produced during the water treatment process and will always occur in chlorinated surface waters. THMs are comprised of Chloroform, Chlorodibromomethane and Dichlorobromomethane with Bromoform occurring occasionally. Results are reported for the individual compounds as well as for total THMs.

Chloroform, Chlorodibromomethane, Dichlorobromomethane and Total THMs were always detected in the distributed water. Bromoform was detected at trace levels in one sample. Total THM occurrences, ranging from 46 ug/L to 63.4 ug/L, were well below the ODWO of 350 ug/L.

CONCLUSIONS

Effective treatment should be provided to ensure safety and consistency in the quality of all waters. The current Ministry policy (#15-14-01) requires that all surface waters shall use treatment processes consisting of coagulation-flocculation, filtration (or equivalent) and disinfection. Surface supplies without such treatment are subject to contamination with biological organisms, including algae, protozoa and other organisms that can cause taste and odour and other aesthetic problems in the distributed water.

While the parameters measured on DWSP may not have exceeded drinking water guidelines, the water produced cannot be considered to be satisfactory until a treatment process appropriate to the source of the supply is applied (see ODWOs revised 1983 p7).

RECOMMENDATIONS

One recommendation can be made:

1) To fully assess water quality at this supply the raw and treated water at the supply must be sampled as well as the water in the distribution system. The pumping station should be retrofitted with sample lines to meet the DWSP requirements.

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP SAMPLE DAY CONDITIONS FOR 1988

	SAMPLE DAY CONDITIONS		TREATMENT CHEMICAL DOSAGES (MG/L)		
			PRE-CHLORINATION	FLUORIDATION	ALKALINITY ADJUST
			CHLORINE	HYDROFLUOSILICIC ACID	SODIUM CARBONATE
DATE	RETENTION TIME(HRS)	FLOW (1000 M3)			
JAN 26	.2	28.6	02.02	01.26	06.30
FEB 23	.2	28.1	02.02	01.26	07.55
MAR 29	.2	29.0	02.27	01.39	08.11
APR 26	.2	32.5	02.15	01.26	08.11
MAY 24	.	28.3	01.82	01.26	08.61
JUN 28	.2	36.0	02.40	01.26	09.11
JUL 26	.2	26.8	01.01	01.20	07.80
AUG 23	.2	28.0	02.52	01.20	09.11
OCT 25	.2	24.1	01.82	01.14	10.09
NOV 29	.2	26.1	02.02	01.51	02.90
DEC 20	.2	27.8	02.15	01.01	03.52

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE 1			SITE 2			SITE 3		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
BACTERIOLOGICAL	AEROMONAS SP	1	0	0	2	0	0	.	.	.
	E. COLI P/A	1	0	0	2	0	0	.	.	.
	FECAL COLIFORM	1	0	0	2	1	0	.	.	.
	STANDRD PLATE CNT MF	6	6	0	7	7	0	2	2	0
	P/A BOTTLE	6	1	0	8	2	0	.	.	.
	STAPH AUREUS	1	0	0	2	0	0	.	.	.
	COLIFORM	1	1	0	2	2	0	.	.	.
	TOTAL COLIFORM MF	8	0	0	8	2	0	2	0	0
	T COLIFORM BCKGRD MF	8	3	0	8	3	0	2	1	0
*TOTAL SCAN BACTERIOLOGICAL		33	11	0	41	17	0	6	3	0
*TOTAL GROUP BACTERIOLOGICAL		33	11	0	41	17	0	6	3	0
CHEMISTRY (FLD)	FLD CHLORINE (COMB)	14	14	0	15	15	0	2	2	0
	FLD CHLORINE FREE	20	20	0	16	16	0	4	4	0
	FLD CHLORINE (TOTAL)	20	20	0	16	16	0	4	4	0
	FLD PH	20	20	0	16	16	0	4	4	0
	FLD TEMPERATURE	20	20	0	16	16	0	4	4	0
	FLD TURBIDITY	10	10	0	.	.	.	.	.	.
*TOTAL SCAN CHEMISTRY (FLD)		104	104	0	79	79	0	18	18	0
CHEMISTRY (LAB)	ALKALINITY	20	20	0	16	16	0	4	4	0

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SCAN	PARAMETER	SITE 1			SITE 2			SITE 3		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHEMISTRY (LAB)	CALCIUM	20	20	0	16	16	0	4	4	0
	CYANIDE	10	0	0	8	0	0	2	0	0
	CHLORIDE	20	20	0	16	16	0	4	4	0
	COLOUR	20	20	0	16	16	0	4	4	0
	CONDUCTIVITY	20	20	0	16	16	0	4	4	0
	FLUORIDE	20	20	0	16	16	0	4	4	0
	HARDNESS	20	20	0	16	16	0	4	4	0
	IONCAL	20	8	0	16	4	0	4	4	0
	LANGELIERS INDEX	4	4	0	4	4	0	0	0	0
	MAGNESIUM	20	20	0	16	16	0	4	4	0
	SODIUM	20	20	0	16	16	0	4	4	0
	AMMONIUM TOTAL	20	17	2	16	12	2	4	4	0
	NITRITE	20	4	16	16	2	14	4	2	2
	TOTAL NITRATES	20	20	0	16	16	0	4	4	0
	NITROGEN TOT KJELD	20	20	0	16	16	0	4	4	0
	PH	20	20	0	16	16	0	4	4	0
	SULPHATE	8	8	0	4	4	0	4	4	0
	TURBIDITY	20	20	0	16	16	0	4	4	0
*TOTAL SCAN CHEMISTRY (LAB)		342	301	18	272	234	16	70	66	2
METALS	SILVER	20	5	14	16	0	5	4	0	2
	ALUMINUM	20	20	0	16	16	0	4	4	0
	ARSENIC	20	0	17	16	0	13	4	0	4

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SCAN	PARAMETER	SITE 1			SITE 2			SITE 3		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
METALS	BARIUM	20	20	0	16	16	0	4	4	0
	BORON	20	1	19	16	0	16	4	0	4
	BERYLLIUM	20	0	13	16	0	9	4	0	3
	CADMIUM	20	1	10	16	0	5	4	0	2
	COBALT	20	1	18	16	0	16	4	1	3
	CHROMIUM	20	3	17	16	0	16	4	0	4
	COPPER	20	20	0	16	16	0	4	4	0
	IRON	20	18	2	16	16	0	4	4	0
	MERCURY	10	4	4	8	5	3	2	2	0
	MANGANESE	20	20	0	16	16	0	4	4	0
	MOLYBDENUM	20	0	20	16	0	16	4	0	4
	NICKEL	20	10	10	16	7	9	4	2	2
	LEAD	20	20	0	16	16	0	4	4	0
	ANTIMONY	20	4	16	16	2	14	4	2	2
	SELENIUM	20	0	16	16	0	11	4	0	3
	STRONTIUM	20	20	0	16	16	0	4	4	0
	TITANIUM	20	17	3	16	12	4	4	2	2
	THALLIUM	20	0	11	16	0	8	4	0	0
	URANIUM	20	0	13	16	0	6	4	0	2
	VANADIUM	20	0	20	16	0	15	4	0	4
	ZINC	20	20	0	16	16	0	4	4	0
*TOTAL SCAN METALS		470	204	223	376	154	166	94	41	41
*TOTAL GROUP INORGANIC & PHYSICAL		916	609	241	727	467	182	182	125	43

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SCAN	PARAMETER	SITE 1			SITE 2			SITE 3		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHLOROAROMATICS	HEXACHLOROBUTADIENE	9	0	0	8	0	0	2	0	0
	123 TRICHLOROBENZENE	9	0	0	8	0	0	2	0	0
	1234 T-CHLOROBENZENE	9	0	0	8	0	0	2	0	0
	1235 T-CHLOROBENZENE	9	0	0	8	0	0	2	0	0
	124 TRICHLOROBENZENE	9	0	0	8	0	0	2	0	0
	1245 T-CHLOROBENZENE	9	0	0	8	0	0	2	0	0
	135 TRICHLOROBENZENE	9	0	0	8	0	0	2	0	0
	HCB	9	0	0	8	0	0	2	0	0
	HEXACHLOROETHANE	9	0	0	8	0	0	2	0	0
	OCTACHLOROSTYRENE	9	0	0	8	0	0	2	0	0
	PENTACHLOROBENZENE	9	0	0	8	0	0	2	0	0
	236 TRICHLOROTOLUENE	9	0	0	8	0	0	2	0	0
	245 TRICHLOROTOLUENE	9	0	0	8	0	0	2	0	0
	26A TRICHLOROTOLUENE	9	0	0	8	0	0	2	0	0
*TOTAL SCAN CHLOROAROMATICS		126	0	0	112	0	0	28	0	0
PESTICIDES & PCB	ALDRIN	9	0	0	8	0	0	2	0	0
	ALPHA BHC	9	0	7	8	0	7	2	0	2
	BETA BHC	9	0	0	8	0	0	2	0	0
	LINDANE	9	0	3	8	0	1	2	0	0
	ALPHA CHLORDANE	9	0	0	8	0	0	2	0	0
	GAMMA CHLORDANE	9	0	0	8	0	0	2	0	0
	DIELDRIN	9	0	0	8	0	0	2	0	0

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SCAN	PARAMETER	SITE 1			SITE 2			SITE 3		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	METHOXYCHLOR	9	0	0	8	0	0	2	0	0
	ENDOSULFAN I	9	0	0	8	0	0	2	0	0
	ENDOSULFAN II	9	0	0	8	0	0	2	0	0
	ENDRIN	9	0	0	8	0	0	2	0	0
	ENDOSULFAN SULPHATE	9	0	0	8	0	0	2	0	0
	HEPTACHLOR EPOXIDE	9	0	0	8	0	0	2	0	0
	HEPTACHLOR	9	0	0	8	0	0	2	0	0
	MIREX	9	0	0	8	0	0	2	0	0
	OXYCHLORDANE	9	0	0	8	0	0	2	0	0
	OPDDT	9	0	0	8	0	0	2	0	0
	PCB	9	0	0	8	0	0	2	0	0
	DDD	9	0	0	8	0	0	2	0	0
	PPDDE	9	0	0	8	0	0	2	0	0
	PPDDT	9	0	0	8	0	0	2	0	0
	AMETRINE	10	0	0	8	0	0	2	0	0
	ATRAZINE	10	0	0	8	0	0	2	0	0
	ATRATONE	10	0	0	8	0	0	2	0	0
	CYANAZINE	10	0	0	8	0	0	2	0	0
	DES ETHYL ATRAZINE	4	0	0	2	0	0	2	0	0
	DES ETHYL SIMAZINE	4	0	0	2	0	0	2	0	0
	PROMETONE	10	0	0	8	0	0	2	0	0
	PROPAZINE	10	0	0	8	0	0	2	0	0
	PROMETRYNE	10	0	0	8	0	0	2	0	0
	METRIBUZIN	10	0	0	8	0	0	2	0	0
	SIMAZINE	10	0	0	8	0	0	2	0	0

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SCAN	PARAMETER	SITE 1			SITE 2			SITE 3		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PESTICIDES & PCB	ALACHLOR	10	0	0	8	0	0	2	0	0
	METOLACHLOR	10	0	0	8	0	0	2	0	0
*TOTAL SCAN PESTICIDES & PCB		307	0	10	260	0	8	68	0	2
SPECIFIC PESTICIDES	TOXAPHENE	0	0	0	0	0	0	0	0	0
*TOTAL SCAN SPECIFIC PESTICIDES		0	0	0	0	0	0	0	0	0
VOLATILES	BENZENE	7	0	0	6	0	0	2	0	0
	TOLUENE	7	0	2	6	1	1	2	0	1
	ETHYLBENZENE	6	0	4	5	0	2	2	0	1
	P-XYLENE	7	0	0	6	0	0	2	0	0
	M-XYLENE	7	0	0	6	0	0	2	0	0
	O-XYLENE	7	0	0	6	0	0	2	0	0
	STYRENE	2	0	2	.	.	.	2	0	2
	1,1 DICHLOROETHYLENE	7	0	0	6	0	0	2	0	0
	METHYLENE CHLORIDE	7	0	0	6	0	0	2	0	0
	T1,2DICHLOROETHYLENE	7	0	0	6	0	0	2	0	0
	1,1 DICHLOROETHANE	7	0	0	6	0	0	2	0	0
	CHLOROFORM	6	6	0	5	5	0	2	2	0
	111, TRICHLOROETHANE	7	0	0	6	0	0	2	0	0
	1,2 DICHLOROETHANE	7	0	0	6	0	0	2	0	0

TABLE 4

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP

SUMMARY TABLE OF RESULTS (1988)

SCAN	PARAMETER	SITE 1			SITE 2			SITE 3		
		TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
VOLATILES	CARBON TETRACHLORIDE	7	0	0	6	0	0	2	0	0
	1,2 DICHLOROPROPANE	7	0	0	6	0	0	2	0	0
	TRICHLOROETHYLENE	7	0	0	6	0	0	2	0	0
	DICHLOROBROMOMETHANE	6	6	0	5	5	0	2	2	0
	112 TRICHLOROETHANE	6	0	0	6	0	0	2	0	0
	CHLORODIBROMOMETHANE	6	0	5	5	0	3	2	0	2
	T-CHLOROETHYLENE	7	0	0	6	0	0	2	0	0
	BROMOFORM	7	0	0	6	0	0	2	0	0
	1122 T-CHLOROETHANE	7	0	0	6	0	0	2	0	0
	CHLOROBENZENE	7	0	0	6	0	0	2	0	0
	1,4 DICHLOROBENZENE	7	0	0	6	0	0	2	0	0
	1,3 DICHLOROBENZENE	7	0	0	6	0	0	2	0	0
	1,2 DICHLOROBENZENE	7	0	0	6	0	0	2	0	0
	TRIFLUOROCHLOROTOLUE	3	0	0	3	0	0	.	.	.
	ETHLYENE DIBROMIDE	7	0	0	6	0	0	2	0	0
	TOTL TRIHALOMETHANES	6	6	0	5	5	0	2	2	0
*TOTAL SCAN VOLATILES		195	18	13	166	16	6	58	6	6
*TOTAL GROUP ORGANIC		628	18	23	538	16	14	154	6	8
TOTAL		1577	638	264	1306	500	196	342	134	51

KEY TO TABLE 5 and 6

A ONTARIO DRINKING WATER OBJECTIVES (ODWO)
1. Maximum Acceptable Concentration (MAC)
1+. MAC for Total Trihalomethanes
1*. MAC for Bacteriological Analyses
Poor water quality is indicated when :
- total coliform counts > 0 < 5
- P/A Bottle Test is present after 48 hours
- Aeromonas organisms are detected in more than 25% of samples in a single submission or in successive submissions from the same sampling site
- Pseudomonas Aeruginosa, Staphylococcus Aureus and members of the Fecal Streptococcus group should not be detected in any sample
- Standard Plate Count should not exceed 500 organisms per ml at 35 ^{0}C within 48 hours

2. Interim Maximum Acceptable Concentration (IMAC)
3. Maximum Desirable Concentration (MDC)
4. Aesthetic or Recommended Operational Guideline
- hardness levels between 80 and 100 mg/L as calcium carbonate are considered to provide an acceptable balance between corrosion and incrustation, water supplies with a hardness >200 mg/L are considered poor and those in excess of 500 mg/L are unacceptable.

B HEALTH & WELFARE CANADA (H&W)
1. Maximum Acceptable Concentration (MAC)
2. Proposed MAC
3. Interim MAC
4. Aesthetic Objective (AO) (for xylenes, the AO is a total)

C WORLD HEALTH ORGANIZATION (WHO)
1. Guideline Value (GV)
2. Tentative GV
3. Aesthetic GV

D US ENVIRONMENTAL PROTECTION AGENCY (EPA)
1. Maximum Contaminant Level (MCL)
2. Suggested No-Adverse Effect Level (SNAEL)
3. Lifetime Health Advisory
4. EPA Ambient Water Quality Criteria

F EUROPEAN ECONOMIC COMMUNITY (EEC)
1. Health Related Guideline Level
2. Aesthetic Guideline Level
3. Maximum Admissable Concentration (MADC)

G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE

H USSR MAXIMUM PERMISSIBLE CONCENTRATION

I NEW YORK STATE AMBIENT WATER GUIDELINE

N/A NONE AVAILABLE

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurable Amount
<T	Greater Than Detection Limit But Not Confident
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
!AW	No Data: Analysis Withdrawn
!CR	No Data: Could Not Confirm By Reanalysis
!CS	No Data: Contamination Suspected
!IL	No Data: Sample Incorrectly Labelled
!IS	No Data: Insufficient Sample
!LA	No Data: Laboratory Accident
!LD	No Data: Test Queued After Sample Discarded
!NA	No Data: No Authorization To Perform Reanalysis
!NP	No Data: No Procedure
!NR	No Data: Sample Not Received
!OP	No Data: Obscured Plate
!PE	No Data: Procedural Error - Sample Discarded
!PH	No Data: Sample pH Outside Valid Range
!RO	No Data: See Attached Report (no numeric results)
!SM	No Data: Sample Missing
!SS	No Data: Send Separate Sample Properly Preserved
!UI	No Data: Indeterminant Interference
!TX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample

RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant
UAL	Unreliable: Sample Age Exceeds Normal Limit
UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminant Interference
XP	Positive After X Number of Hours

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
	SITE 1		SITE 2		SITE 3	
	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
BACTERIOLOGICAL						
AEROMONAS SP (0=ABSENT)			**DET'N LIMIT = N/A**		**GUIDELINE = 0 (A1)**	
MAR	.	.	.	0	.	.
JUL	.	0	.	.	.	.
AUG	.	.	.	0	.	.
E. COLI P/A (0=ABSENT)			**DET'N LIMIT = N/A**		**GUIDELINE = N/A**	
MAR	.	.	.	0	.	.
JUL	.	0	.	.	.	.
AUG	.	.	.	0	.	.
FECAL COLIFORM (0=ABSENT)			**DET'N LIMIT = N/A**		**GUIDELINE = 0 (A1)**	
MAR	.	.	.	1	.	.
JUL	.	0	.	.	.	.
AUG	.	.	.	0	.	.
STANDRD PLATE CNT MF (CT/ML)			**DET'N LIMIT = 0**		**GUIDELINE = 500/ML (A1)**	
JAN	.	39	.	33	.	.
FEB	.	.	.	4	.	.
MAR	.	5	.	4	.	.
APR	.	21	.	23	.	.
MAY	.	.	.	4	.	.
JUN	.	!AW	.	2	.	.
JUL	.	83	.	1100	.	.
AUG	.	!AW	.	!AW	.	.
OCT	.	290 T24	.	.	.	70 T24
NOV	.	910 T24	.	.	.	78 T24
P/A BOTTLE (0=ABSENT)			**DET'N LIMIT = 0**		**GUIDELINE = 0 (A1*)**	
JAN	.	0	.	0	.	.
FEB	.	.	.	0	.	.
MAR	.	0	.	1	.	.
APR	.	0	.	0	.	.
MAY	.	.	.	0	.	.
JUN	.	0	.	0	.	.
JUL	.	1	.	0	.	.
AUG	.	0	.	1	.	.
STAPH AUREUS (0=ABSENT)			**DET'N LIMIT = N/A**		**GUIDELINE = 0 (A1)**	
MAR	.	.	.	0	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
JUL	.	0	.	.	.	.
AUG	.	.	.	0	.	.
COLIFORM (0=ABSENT)		DET'N LIMIT = N/A		GUIDELINE = 0 (A1)		
MAR	.	.	.	1	.	.
JUL	.	1	.	.	.	.
AUG	.	.	.	1	.	.
TOTAL COLIFORM MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = 5/100ML(A1)		
JAN	.	0	.	0	.	.
FEB	.	.	.	0	.	.
MAR	.	0	.	0	.	.
APR	.	0	.	0	.	.
MAY	.	.	.	1	.	.
JUN	.	0	.	0	.	.
JUL	.	0	.	0	.	.
AUG	.	0	.	7 A3C	.	.
OCT	.	0 T24	.	.	.	0 T24
NOV	.	0 T24	.	.	.	0 T24
T COLIFORM BCKGRD MF (CT/100ML)		DET'N LIMIT = 0		GUIDELINE = N/A		
JAN	.	0	.	114	.	.
FEB	.	.	.	0	.	.
MAR	.	0	.	0	.	.
APR	.	0	.	0	.	.
MAY	.	.	.	14	.	.
JUN	.	0	.	0	.	.
JUL	.	180	.	0	.	.
AUG	.	0	.	2400 >	.	.
OCT	.	7 T24	.	.	.	0 T24
NOV	.	5 T24	.	.	.	1 T24

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
CHEMISTRY (FLD)						
FLD CHLORINE (COMB) (MG/L)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.100	.100	.100	.100	.	.
FEB	.200	.200	.100	.200	.	.
MAR	.	.	.100	.100	.	.
APR	.070	.040	.	.200	.	.
MAY	.	.	.100	.200	.	.
JUN	.	.	.100	.200	.	.
JUL	.200	.200	.100	.200	.	.
AUG	.300	.400	.100	.100	.	.
OCT	.400	.400	.	.	.100	.100
NOV	.200	.200	.	.	.	.
FLD CHLORINE FREE (MG/L)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.100	.200	.100	.100	.	.
FEB	.100	.150	.100	.500	.	.
MAR	.300	.300	.100	.100	.	.
APR	.220	.260	.100	.100	.	.
MAY	.100	.300	.100	.100	.	.
JUN	.100	.200	.100	.100	.	.
JUL	.100	.100	.100	.100	.	.
AUG	.200	.150	.100	.200	.	.
OCT	.100	.100	.	.	.100	.100
NOV	.170	.100	.	.	.100	.100
FLD CHLORINE (TOTAL) (MG/L)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.200	.300	.100	.100	.	.
FEB	.300	.350	.200	.700	.	.
MAR	.300	.300	.200	.200	.	.
APR	.290	.300	.200	.300	.	.
MAY	.300	.350	.100	.200	.	.
JUN	.250	.300	.200	.300	.	.
JUL	.300	.300	.200	.300	.	.
AUG	.500	.550	.200	.300	.	.
OCT	.300	.300	.	.	.200	.200
NOV	.300	.300	.	.	.100	.100
FLD PH (DIMENSNLESS)			DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)	
JAN	7.200	7.200	7.400	7.000	.	.
FEB	7.200	7.200	7.200	7.000	.	.
MAR	7.200	7.200	6.800	7.200	.	.
APR	7.200	7.200	7.000	7.000	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
MAY	7.200	7.200	7.000	7.200	.	.
JUN	7.200	7.200	7.200	6.800	.	.
JUL	7.200	7.200	6.800	7.000	.	.
AUG	7.200	7.200	7.000	7.000	.	.
OCT	7.200	7.200	.	.	6.800	7.000
NOV	7.200	7.200	.	.	7.000	7.000
FLD TEMPERATURE (DEG.C)			DET'N LIMIT = N/A		GUIDELINE = 15 (A1)	
JAN	13.000	3.000	14.000	3.000	.	.
FEB	12.000	3.000	13.000	3.000	.	.
MAR	11.000	4.000	11.000	3.000	.	.
APR	11.000	4.000	.900	.600	.	.
MAY	12.000	8.000	10.000	9.000	.	.
JUN	14.600	10.000	14.000	11.000	.	.
JUL	16.000	13.000	17.000	14.000	.	.
AUG	17.000	14.000	16.000	13.000	.	.
OCT	15.000	11.500	.	.	13.000	11.000
NOV	16.000	10.000	.	.	11.000	9.000
FLD TURBIDITY (FTU)			DET'N LIMIT = N/A		GUIDELINE = 1.0 (A1)	
APR	.950	.950	.	.	.	.
JUN	.700	.700	.	.	.	.
AUG	.600	.600	.	.	.	.
OCT	.500	.500	.	.	.	.
NOV	.720	.720	.	.	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
CHEMISTRY (LAB)						
ALKALINITY (MG/L)			DET'N LIMIT = .200		GUIDELINE = 30-500 (A4)	
JAN	18.500	17.900	18.600	21.400	.	.
FEB	20.100	22.800	20.400	19.600	.	.
MAR	21.100	21.200	21.500	21.200	.	.
APR	21.400	20.900	20.900	20.500	.	.
MAY	19.800	19.800	19.400	19.600	.	.
JUN	20.400	19.900	18.800	19.300	.	.
JUL	21.600	20.600	20.500	20.000	.	.
AUG	22.200	22.300	21.900	21.900	.	.
OCT	23.200	21.900	.	.	22.300	24.900
NOV	16.500	15.700	.	.	16.400	18.200
CALCIUM (MG/L)			DET'N LIMIT = .100		GUIDELINE = 100 (F2)	
JAN	6.600	5.200	6.400	5.600	.	.
FEB	6.600	6.400	6.200	6.200	.	.
MAR	7.400	7.200	7.200	7.000	.	.
APR	7.400	6.800	6.200	6.200	.	.
MAY	6.800	6.600	6.400	6.400	.	.
JUN	6.400	6.000	6.000	6.400	.	.
JUL	7.600	7.400	7.400	7.200	.	.
AUG	5.800	5.800	6.290	6.110	.	.
OCT	7.200	7.400	.	.	7.400	7.200
NOV	5.000	5.600	.	.	5.000	6.000
CHLORIDE (MG/L)			DET'N LIMIT = .200		GUIDELINE = 250 (A3)	
JAN	15.400	15.400	15.400	15.200	.	.
FEB	17.900	17.800	17.800	17.500	.	.
MAR	20.700	20.400	20.300	20.200	.	.
APR	17.300	17.400	16.400	16.800	.	.
MAY	14.100	14.900	13.900	13.900	.	.
JUN	13.600	13.600	13.500	13.700	.	.
JUL	14.300	13.700	13.900	13.900	.	.
AUG	14.000	13.700	13.600	13.800	.	.
OCT	13.600	13.500	.	.	13.600	13.600
NOV	14.700	14.200	.	.	14.200	14.100
COLOUR (TCU)			DET'N LIMIT = .5		GUIDELINE = 5.0 (A3)	
JAN	6.500	7.000	5.500	5.500	.	.
FEB	7.500	7.500	6.500	4.000	.	.
MAR	5.500	5.000	7.000	5.500	.	.
APR	7.000	7.500	7.000	6.000	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
MAY	5.500	5.500	6.000	5.500	.	.
JUN	5.000	5.000	5.000	5.500	.	.
JUL	5.500	6.000	5.500	5.500	.	.
AUG	4.500	4.500	5.000	5.000	.	.
OCT	5.500	5.000	.	.	6.000	7.000
NOV	6.000	6.500	.	.	7.500	7.000
CONDUCTIVITY (UMHO/CM)			DET'N LIMIT = 1		GUIDELINE = 400 (F2)	
JAN	121	118	121	121	.	.
FEB	133	137	133	132	.	.
MAR	148	146	145	144	.	.
APR	140	135	135	131	.	.
MAY	119	120	117	117	.	.
JUN	119	118	115	118	.	.
JUL	122	119	119	118	.	.
AUG	121	119	120	119	.	.
OCT	125	119	.	.	120	124
NOV	117	111	.	.	113	115
FLUORIDE (MG/L)			DET'N LIMIT = .01		GUIDELINE = 2.400 (A1)	
JAN	1.160	1.200	1.180	1.140	.	.
FEB	1.080	1.080	1.140	1.100	.	.
MAR	.790	.910	.880	.880	.	.
APR	1.200	1.200	1.250	1.210	.	.
MAY	1.210	1.210	1.210	1.200	.	.
JUN	1.160	1.160	1.150	1.150	.	.
JUL	1.070	1.080	1.050	1.080	.	.
AUG	.960	.940	.960	1.000	.	.
OCT	1.020	1.040	.	.	1.040	1.060
NOV	1.180	1.200	.	.	1.160	1.100
HARDNESS (MG/L)			DET'N LIMIT = .500		GUIDELINE = 80-100 (A4)	
JAN	22.000	17.000	22.000	19.000	.	.
FEB	22.000	22.000	22.000	22.000	.	.
MAR	25.000	25.000	25.000	24.000	.	.
APR	26.000	24.000	22.000	23.000	.	.
MAY	24.000	23.000	24.000	23.000	.	.
JUN	23.000	15.000	23.000	23.000	.	.
JUL	26.000	26.000	26.000	25.000	.	.
AUG	21.000	21.000	21.900	21.400	.	.
OCT	25.000	24.000	.	.	25.000	25.000
NOV	19.000	21.000	.	.	19.000	25.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
IONCAL (DMSNLESS)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.	.
FEB	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.	.
MAR	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.	.
APR	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.	.
MAY	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.	.
JUN	.000 NAF	.000 NAF	.000 NAF	.000 NAF	.	.
JUL	1.697	4.531	1.134	1.509	.	.
AUG	9.368	13.080	8.888	8.757	.	.
OCT	.259	4.913	.	.	5.783	.159
NOV	10.310	.424	.	.	6.539	.587
LANGELIERS INDEX (DMSNLESS)			DET'N LIMIT = N/A		GUIDELINE = N/A	
JAN	-1.881 NAF	-2.007 NAF	-1.901 NAF	-1.308 NAF	.	.
FEB	-1.790 NAF	-1.430 NAF	-1.820 NAF	-1.857 NAF	.	.
MAR	-1.686 NAF	-1.625 NAF	-1.638 NAF	-1.646 NAF	.	.
APR	1.546 NAF	1.581 NAF	1.631 NAF	1.637 NAF	.	.
MAY	1.817 NAF	1.830 NAF	1.871 NAF	1.897 NAF	.	.
JUN	-1.710 NAF	-1.719 NAF	-1.792 NAF	-1.774 NAF	.	.
JUL	-1.602	-1.603	-1.615	-1.627	.	.
AUG	-1.657	-1.674	-1.697	-1.700	.	.
OCT	-1.606	-1.556	.	.	-1.609	-1.225
NOV	-2.159	-2.028	.	.	-2.080	-1.806
MAGNESIUM (MG/L)			DET'N LIMIT = .050		GUIDELINE = 30 (F2)	
JAN	1.300	1.100	1.300	1.300	.	.
FEB	1.500	1.500	1.500	1.500	.	.
MAR	1.700	1.700	1.700	1.600	.	.
APR	1.900	1.800	1.600	1.700	.	.
MAY	1.700	1.700	1.800	1.700	.	.
JUN	1.800	1.700	1.800	1.800	.	.
JUL	1.700	1.700	1.700	1.700	.	.
AUG	1.500	1.500	1.500	1.500	.	.
OCT	1.700	1.400	.	.	1.600	1.600
NOV	1.700	1.500	.	.	1.700	2.400
SODIUM (MG/L)			DET'N LIMIT = .200		GUIDELINE = 200 (C3)	
JAN	13.200	12.800	12.800	13.000	.	.
FEB	15.000	14.800	15.200	14.400	.	.
MAR	17.400	17.200	17.400	17.200	.	.
APR	14.600	14.600	14.200	14.000	.	.
MAY	12.400	12.800	12.400	12.600	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
JUN	12.800	12.600	12.000	12.600	.	.
JUL	12.800	12.800	12.200	12.200	.	.
AUG	12.600	11.600	11.800	12.000	.	.
OCT	13.000	13.200	.	.	13.400	13.400
NOV	10.800	11.400	.	.	11.000	10.600
AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002		GUIDELINE = .05 (F2)	
JAN	.086	.012	.032	.012	.	.
FEB	.066	.010	.044	.008 <T	.	.
MAR	.134	.008 <T	.058	.018	.	.
APR	.098	.018	.034	.016	.	.
MAY	.128	.018	.026	.014	.	.
JUN	.048	.016	.016	.068	.	.
JUL	.076	.010	.038	.008 <T	.	.
AUG	.056	BDL	BDL	BDL	.	.
OCT	.010	.006	.	.	.070	.006
NOV	.008 <T	.010	.	.	.040	.008
NITRITE (MG/L)			DET'N LIMIT = 0.001		GUIDELINE = 1.000 (A1)	
JAN	.002 <T	.002 <T	.003 <T	.002 <T	.	.
FEB	.002 <T	.001 <T	.002 <T	.001 <T	.	.
MAR	.003 <T	.002 <T	.002 <T	.002 <T	.	.
APR	.003	.002	.003	.003	.	.
MAY	.002 <T	.002 <T	.004 <T	.002 <T	.	.
JUN	.003 <T	.002 <T	.002 <T	.002 <T	.	.
JUL	.003 <T	.004 <T	.003 <T	.003 <T	.	.
AUG	.004 <T	.003 <T	.003 <T	.003 <T	.	.
OCT	.009	.011	.	.	.012	.014
NOV	.004 <T	.003 <T	.	.	.003 <T	.002 <T
TOTAL NITRATES (MG/L)			DET'N LIMIT = .020		GUIDELINE = 10.000 (A1)	
JAN	.365	.240	.290	.240	.	.
FEB	.400	.290	.365	.280	.	.
MAR	.465	.330	.400	.325	.	.
APR	.440	.325	.360	.315	.	.
MAY	.445	.275	.290	.270	.	.
JUN	.310	.265	.265	.385	.	.
JUL	.350	.260	.335	.260	.	.
AUG	.340	.265	.270	.280	.	.
OCT	.560	.230	.	.	.345	.230
NOV	.435	.205	.	.	.370	.200

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
NITROGEN TOT KJELD (MG/L)			DET'N LIMIT = .020		GUIDELINE = N/A	
JAN	.280	.170	.220	.190	.	.
FEB	.300	.180	.270	.200	.	.
MAR	.350	.210	.270	.250	.	.
APR	.300	.210	.230	.210	.	.
MAY	.470	.240	.250	.200	.	.
JUN	.230	.210	.200	.320	.	.
JUL	.390	.220	.240	.220	.	.
AUG	.350	.140	.160	.170	.	.
OCT	.310	.110	.	.	.320	.180
NOV	.270	.190	.	.	.270	.190
PH (DMSNLESS)			DET'N LIMIT = N/A		GUIDELINE = 6.5-8.5(A4)	
JAN	7.400	7.390	7.390	7.980	.	.
FEB	7.460	7.780	7.450	7.430	.	.
MAR	7.500	7.570	7.550	7.560	.	.
APR	7.630	7.640	7.630	7.630	.	.
MAY	7.420	7.420	7.400	7.370	.	.
JUN	7.540	7.570	7.520	7.500	.	.
JUL	7.550	7.580	7.570	7.580	.	.
AUG	7.600	7.580	7.530	7.540	.	.
OCT	7.540	7.600	.	.	7.540	7.890
NOV	7.290	7.390	.	.	7.370	7.520
SULPHATE (MG/L)			DET'N LIMIT = .200		GUIDELINE = 500. (A3)	
JUL	9.750	9.770	9.840	9.820	.	.
AUG	9.230	8.940	9.330	8.950	.	.
OCT	8.410	8.370	.	.	8.410	8.530
NOV	8.300	8.000	.	.	8.300	8.500
TURBIDITY (FTU)			DET'N LIMIT = .02		GUIDELINE = 1.00 (A1)	
JAN	.410	.240	.490	.230	.	.
FEB	.480	.380	.450	.730	.	.
MAR	.730	.420	.590	.780	.	.
APR	.550	.560	.630	.540	.	.
MAY	.600	.440	.640	.610	.	.
JUN	.530	.230	.200	.390	.	.
JUL	1.080	.570	.770	.970	.	.
AUG	1.220	.980	.880	.710	.	.
OCT	.660	.430	.	.	.410	.410
NOV	.650	.710	.	.	.750	.740

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
METALS						
SILVER (UG/L)			DET'N LIMIT = .020		GUIDELINE = 50. (A1)	
JAN	.860	.030 <T	.040 <T	BDL	.	.
FEB	BDL	.530	.040 <T	BDL	.	.
MAR	.210 <T	.230 <T	.050 <T	BDL	.	.
APR	.290 <T	.150 <T	BDL	BDL	.	.
MAY	.150 <T	.050 <T	BDL	BDL	.	.
JUN	.250 <T	.060 <T	.030 <T	BDL	.	.
JUL	1.500	.040 <T	BDL	BDL	.	.
AUG	.700	.060 <T	BDL	.030 <T	.	.
OCT	7.700	.090 <T	.	.	.050 <T	BDL
NOV	.380 <T	.040 <T	.	.	.120 <T	BDL
ALUMINUM (UG/L)			DET'N LIMIT = .050		GUIDELINE = 100.(A4)	
JAN	8.500	8.100	8.600	9.100	.	.
FEB	9.800	10.000	9.200	11.000	.	.
MAR	14.000	14.000	14.000	11.000	.	.
APR	23.000	19.000	16.000	16.000	.	.
MAY	11.000	13.000	11.000	11.000	.	.
JUN	15.000	10.000	11.000	8.800	.	.
JUL	19.000	9.400	9.100	8.000	.	.
AUG	9.700	8.700	8.200	8.200	.	.
OCT	7.500	6.300	.	.	8.500	7.400
NOV	10.000	10.000	.	.	12.000	10.000
ARSENIC (UG/L)			DET'N LIMIT = 0.050		GUIDELINE = 50.0 (A1)	
JAN	.470 <T	.560 <T	.440 <T	.410 <T	.	.
FEB	.290 <T	.390 <T	.300 <T	.330 <T	.	.
MAR	.110 <T	BDL	BDL	.060 <T	.	.
APR	BDL	BDL	BDL	BDL	.	.
MAY	.370 <T	.420 <T	.440 <T	.380 <T	.	.
JUN	.370 <T	.480 <T	.540 <T	.550 <T	.	.
JUL	.380 <T	.420 <T	.520 <T	.520 <T	.	.
AUG	.580 <T	.560 <T	.440 <T	.650 <T	.	.
OCT	.560 <T	.420 <T	.	.	.500 <T	.600 <T
NOV	.180 <T	.460 <T	.	.	.380 <T	.340 <T
BARIUM (UG/L)			DET'N LIMIT = 0.020		GUIDELINE = 1000. (A1)	
JAN	15.000	15.000	19.000	16.000	.	.
FEB	14.000	14.000	17.000	15.000	.	.
MAR	17.000	17.000	19.000	17.000	.	.
APR	18.000	18.000	17.000	17.000	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
MAY	17.000	16.000	16.000	16.000	.	.
JUN	17.000	17.000	19.000	19.000	.	.
JUL	19.000	18.000	19.000	18.000	.	.
AUG	15.000	15.000	16.000	16.000	.	.
OCT	16.000	14.000	.	.	15.000	14.000
NOV	16.000	14.000	.	.	15.000	15.000
BORON (UG/L)		DET'N LIMIT = 0.200		GUIDELINE = 5000. (A1)		
JAN	8.400 <T	7.800 <T	11.000 <T	8.100 <T	.	.
FEB	8.200 <T	17.000 <T	15.000 <T	7.800 <T	.	.
MAR	9.200 <T	11.000 <T	8.700 <T	8.100 <T	.	.
APR	12.000 <T	11.000 <T	7.400 <T	6.600 <T	.	.
MAY	13.000 <T	4.300 <T	3.400 <T	3.300 <T	.	.
JUN	15.000 <T	10.000 <T	11.000 <T	7.300 <T	.	.
JUL	14.000 <T	9.400 <T	9.100 <T	8.800 <T	.	.
AUG	14.000 <T	9.300 <T	8.100 <T	15.000 <T	.	.
OCT	10.000 <T	18.000 <T	.	.	8.200 <T	8.300 <T
NOV	22.000	13.000 <T	.	.	8.500 <T	9.100 <T
BERYLLIUM (UG/L)		DET'N LIMIT = 0.010		GUIDELINE = .20 (W)		
JAN	.020 <T	.010 <T	.010 <T	.010 <T	.	.
FEB	.020 <T	.010 <T	.010 <T	BDL	.	.
MAR	BDL	BDL	.050 <T	.020 <T	.	.
APR	BDL	.020 <T	.020 <T	.030 <T	.	.
MAY	.040 <T	.030 <T	.020 <T	BDL	.	.
JUN	BDL	BDL	BDL	BDL	.	.
JUL	BDL	.030 <T	BDL	BDL	.	.
AUG	BDL	.020 <T	BDL	.060 <T	.	.
OCT	.040 <T	.020 <T	.	.	BDL	.030 <T
NOV	.030 <T	.040 <T	.	.	.080 <T	.020 <T
CADMIUM (UG/L)		DET'N LIMIT = 0.050		GUIDELINE = 5.000 (A1)		
JAN	.100 <T	BDL	.060 <T	BDL	.	.
FEB	BDL	.350 <T	.090 <T	BDL	.	.
MAR	.080 <T	BDL	BDL	BDL	.	.
APR	.170 <T	BDL	BDL	BDL	.	.
MAY	.070 <T	BDL	BDL	BDL	.	.
JUN	.100 <T	BDL	.070 <T	BDL	.	.
JUL	1.100	BDL	.120 <T	.070 <T	.	.
AUG	.430 <T	BDL	BDL	BDL	.	.
OCT	.090 <T	BDL	.	.	.080 <T	BDL
NOV	.140 <T	.060 <T	.	.	.190 <T	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
COBALT (UG/L)			DET'N LIMIT = 0.020		GUIDELINE = 1000 (H)	
JAN	.300 <T	.090 <T	.100 <T	.110 <T	.	.
FEB	.070 <T	.120 <T	.120 <T	.070 <T	.	.
MAR	.150 <T	.160 <T	.090 <T	.060 <T	.	.
APR	.160 <T	.260 <T	.120 <T	.080 <T	.	.
MAY	.440 <T	.150 <T	.100 <T	.110 <T	.	.
JUN	.180 <T	.080 <T	.310 <T	.150 <T	.	.
JUL	.130 <T	BDL	.120 <T	.030 <T	.	.
AUG	.380 <T	.120 <T	.070 <T	.070 <T	.	.
OCT	2.100	.080 <T	.	.	.440 <T	.060 <T
NOV	.790 <T	.100 <T	.	.	1.100	.120 <T
CHROMIUM (UG/L)			DET'N LIMIT = 0.100		GUIDELINE = 50. (A1)	
JAN	.300 <T	.180 <T	.260 <T	.260 <T	.	.
FEB	.160 <T	.180 <T	.250 <T	.240 <T	.	.
MAR	.310 <T	.320 <T	.310 <T	.280 <T	.	.
APR	.880 <T	.640 <T	.430 <T	.450 <T	.	.
MAY	.910 <T	.200 <T	.200 <T	.160 <T	.	.
JUN	2.500	.210 <T	.630 <T	.260 <T	.	.
JUL	1.800	.300 <T	.370 <T	.340 <T	.	.
AUG	.600 <T	.270 <T	.210 <T	.870 <T	.	.
OCT	.470 <T	1.700	.	.	.180 <T	.270 <T
NOV	.960 <T	.860 <T	.	.	.360 <T	.350 <T
COPPER (UG/L)			DET'N LIMIT = .100		GUIDELINE = 1000 (A3)	
JAN	100.000	28.000	240.000	31.000	.	.
FEB	21.000	78.000	200.000	21.000	.	.
MAR	45.000	19.000	150.000	19.000	.	.
APR	150.000	23.000	60.000	22.000	.	.
MAY	120.000	25.000	41.000	20.000	.	.
JUN	200.000	47.000	74.000	31.000	.	.
JUL	300.000	45.000	93.000	40.000	.	.
AUG	140.000	44.000	91.000	51.000	.	.
OCT	140.000	48.000	.	.	270.000	82.000
NOV	260.000	32.000	.	.	330.000	85.000
IRON (UG/L)			DET'N LIMIT = 4.000		GUIDELINE = 300. (A3)	
JAN	140.000	160.000	120.000	120.000	.	.
FEB	190.000	150.000	130.000	53.000	.	.
MAR	110.000	120.000	130.000	120.000	.	.
APR	180.000	230.000	130.000	110.000	.	.
MAY	93.000	130.000	93.000	80.000	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
JUN	77.000	64.000	79.000	64.000	.	.
JUL	97.000	110.000	97.000	76.000	.	.
AUG	49.000 <T	47.000 <T	63.000	59.000	.	.
OCT	54.000	55.000	.	.	80.000	110.000
NOV	110.000	140.000	.	.	160.000	150.000
MERCURY (UG/L)			DET'N LIMIT = 0.010		GUIDELINE = 1.000 (A1)	
JAN	.	.010	.	.030	.	.
FEB	.	.010	.	.140	.	.
MAR	.	.020	.	.0[illegible]	.	.
APR	.	.020	.	.050	.	.
MAY	.	.020 <T	.	.040 <T	.	.
JUN	.	.020 <T	.	.050 <T	.	.
JUL	.	BDL	.	.070	.	.
AUG	.	BDL	.	.050 <T	.	.
OCT	.	.020 <T	.	.	.	.080
NOV	.	.030 <T	.	.	.	.080
MANGANESE (UG/L)			DET'N LIMIT = .050		GUIDELINE = 50.0 (A3)	
JAN	8.200	8.700	4.800	6.600	.	.
FEB	8.500	8.400	6.100	5.600	.	.
MAR	8.600	8.900	6.300	7.000	.	.
APR	9.200	9.600	7.200	6.600	.	.
MAY	8.600	9.200	7.100	6.700	.	.
JUN	9.500	9.600	5.900	5.400	.	.
JUL	11.000	10.000	7.100	5.600	.	.
AUG	13.000	13.000	5.600	5.400	.	.
OCT	11.000	8.300	.	.	11.000	10.000
NOV	10.000	9.900	.	.	11.000	9.900
MOLYBDENUM (UG/L)			DET'N LIMIT = 0.020		GUIDELINE = 500 (N)	
JAN	.070 <T	.070 <T	.070 <T	.060 <T	.	.
FEB	.080 <T	.060 <T	.060 <T	.060 <T	.	.
MAR	.100 <T	.120 <T	.090 <T	.080 <T	.	.
APR	.110 <T	.090 <T	.060 <T	.060 <T	.	.
MAY	.110 <T	.070 <T	.040 <T	.060 <T	.	.
JUN	.080 <T	.050 <T	.030 <T	.080 <T	.	.
JUL	.340 <T	.100 <T	.100 <T	.060 <T	.	.
AUG	.080 <T	.060 <T	.080 <T	.070 <T	.	.
OCT	.160 <T	.060 <T	.	.	.080 <T	.050 <T
NOV	.140 <T	.030 <T	.	.	.040 <T	.070 <T

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY L.P 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
NICKEL (UG/L)			DET'N LIMIT = 0.100		GUIDELINE = 50. (F3)	
JAN	110.000	1.200 <T	5.400	.850 <T	.	.
FEB	.700 <T	29.000	11.000	.530 <T	.	.
MAR	25.000	1.060 <T	6.300	.390 <T	.	.
APR	5.000	.730 <T	3.900	.670 <T	.	.
MAY	180.000	.940 <T	6.900	.730 <T	.	.
JUN	26.000	1.000 <T	84.000	.970 <T	.	.
JUL	66.000	.870 <T	39.000	.860 <T	.	.
AUG	34.000	.730 <T	.750 <T	.550 <T	.	.
OCT	1200.000	1.400 <T	.	.	160.000	.910 <T
NOV	390.000	.690 <T	.	.	320.000	.890 <T
LEAD (UG/L)			DET'N LIMIT = 0.050		GUIDELINE = 50. (A1)	
JAN	17.000	3.200	8.600	.960	.	.
FEB	2.200	30.000	6.400	.550	.	.
MAR	15.000	3.100	3.000	.660	.	.
APR	40.000	3.700	4.000	.740	.	.
MAY	21.000	2.300	1.600	.810	.	.
JUN	32.000	5.100	3.100	.890	.	.
JUL	63.000 RRV	3.700	3.700	.980	.	.
AUG	35.000	3.600	3.100	1.400	.	.
OCT	27.000	4.500	.	.	5.700	2.200
NOV	29.000	2.200	.	.	10.000	1.800
ANTIMONY (UG/L)			DET'N LIMIT = .050		GUIDELINE = 146. (D4)	
JAN	.060 <T	.050 <T	.080 <T	.060 <T	.	.
FEB	.060 <T	.070 <T	.090 <T	.080 <T	.	.
MAR	.070 <T	.070 <T	.150 <T	.100 <T	.	.
APR	.140 <T	.120 <T	.100 <T	.090 <T	.	.
MAY	.080 <T	.080 <T	.050 <T	.050 <T	.	.
JUN	.110 <T	.040 <T	.070 <T	.090 <T	.	.
JUL	.150 <T	.080 <T	.120 <T	.130 <T	.	.
AUG	.780	.390	.410	.330	.	.
OCT	.080 <T	.060 <T		.	.070 <T	.060 <T
NOV	.350	.380	.	.	.320	.460
SELENIUM (UG/L)			DET'N LIMIT = 0.200		GUIDELINE = 10. (A1)	
JAN	.240 <T	.330 <T	.420 <T	BDL	.	.
FEB	BDL	.820 <T	.280 <T	.510 <T	.	.
MAR	.360 <T	1.100 <T	1.700 <T	1.100 <T	.	.
APR	1.500 <T	BDL	.810 <T	.380 <T	.	.
MAY	.740 <T	1.400 <T	BDL	.910 <T	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
JUN	1.200 <T	.500 <T	.760 <T	1.200 <T	.	.
JUL	.740 <T	.950 <T	BDL	.970 <T	.	.
AUG	.210 <T	BDL	BDL	BDL	.	.
OCT	.740 <T	1.200 <T	.	.	.780 <T	.940 <T
NOV	BDL	.950 <T	.	.	1.400 <T	BDL
STRONTIUM (UG/L)			DET'N LIMIT = .050		GUIDELINE = 8000.(H)	
JAN	50.000	48.000	52.000	49.000	.	.
FEB	51.000	50.000	52.000	51.000	.	.
MAR	53.000	54.000	54.000	52.000	.	.
APR	55.000	54.000	51.000	52.000	.	.
MAY	50.000	46.000	47.000	49.000	.	.
JUN	46.000	43.000	46.000	49.000	.	.
JUL	59.000	53.000	53.000	54.000	.	.
AUG	44.000	43.000	42.000	46.000	.	.
OCT	45.000	45.000	.	.	43.000	43.000
NOV	45.000	43.000	.	.	44.000	45.000
TITANIUM (UG/L)			DET'N LIMIT = .050		GUIDELINE = N/A	
JAN	1.900	2.000	2.100	2.300	.	.
FEB	2.300	2.800	2.600	2.600	.	.
MAR	5.500	5.400	5.100	4.600	.	.
APR	3.700	3.200	3.300	3.300	.	.
MAY	1.900 <T	1.600 <T	1.700 <T	2.000 <T	.	.
JUN	2.000 <T	2.100	2.200	1.900 <T	.	.
JUL	2.900	2.400	2.400	1.900 <T	.	.
AUG	8.400	8.300	2.600	2.700	.	.
OCT	10.000	9.200	.	.	1.600 <T	1.600 <T
NOV	16.000	12.000	.	.	3.000	3.100
THALLIUM (UG/L)			DET'N LIMIT = .010		GUIDELINE = 13. (D4)	
JAN	BDL	BDL	.010 <T	BDL	.	.
FEB	BDL	BDL	BDL	BDL	.	.
MAR	.010 <T	.030 <T	.010 <T	.010 <T	.	.
APR	.030 <T	.020 <T	BDL	BDL	.	.
MAY	.080 <T	.100 <T	.020 <T	.040 <T	.	.
JUN	.040 <T	.050 <T	.040 <T	.070 <T	.	.
JUL	.030 <T	BDL	.030 <T	BDL	.	.
AUG	BDL	BDL	BDL	BDL	.	.
OCT	BDL	BDL	.	.	BDL	BDL
NOV	.020 <T	.030 <T	.	.	BDL	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
URANIUM (UG/L)			DET'N LIMIT = .020		GUIDELINE = 20. (A2)	
JAN	.020 <T	.020 <T	BDL	BDL	.	.
FEB	.040 <T	.020 <T	BDL	.020 <T	.	.
MAR	BDL	.050 <T	.080 <T	.040 <T	.	.
APR	BDL	BDL	BDL	.040 <T	.	.
MAY	.030 <T	.040 <T	BDL	BDL	.	.
JUN	.080 <T	.060 <T	.040 <T	BDL	.	.
JUL	.040 <T	BDL	BDL	BDL	.	.
AUG	.030 <T	BDL	BDL	.050 <T	.	.
OCT	BDL	BDL	.	.	BDL	BDL
NOV	.060 <T	.030 <T	.	.	.030 <T	.030 <T
VANADIUM (UG/L)			DET'N LIMIT = .050		GUIDELINE = 100 (H)	
JAN	.100 <T	.070 <T	.080 <T	.080 <T	.	.
FEB	.060 <T	.030 <T	.050 <T	.050 <T	.	.
MAR	.030 <T	.050 <T	.100 <T	.080 <T	.	.
APR	.150 <T	.120 <T	.100 <T	.090 <T	.	.
MAY	.050 <T	.050 <T	.050 <T	.020 <T	.	.
JUN	.020 <T	.030 <T	.020 <T	BDL	.	.
JUL	.090 <T	.080 <T	.050 <T	.070 <T	.	.
AUG	.080 <T	.060 <T	.060 <T	.070 <T	.	.
OCT	.100 <T	.080 <T	.	.	.090 <T	.080 <T
NOV	.090 <T	.090 <T	.	.	.060 <T	.080 <T
ZINC (UG/L)			DET'N LIMIT = .001		GUIDELINE = 5.00 (A3)	
JAN	18.000	11.000	20.000	11.000	.	.
FEB	8.900	22.000	21.000	10.000	.	.
MAR	15.000	9.600	14.000	10.000	.	.
APR	23.000	9.200	21.000	10.000	.	.
MAY	27.000	10.000	13.000	12.000	.	.
JUN	29.000	13.000	27.000	14.000	.	.
JUL	57.000	12.000	27.000	13.000	.	.
AUG	39.000	11.000	26.000	14.000	.	.
OCT	180.000	11.000	.	.	24.000	10.000
NOV	160.000	8.900	.	.	32.000	12.000

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
PESTICIDES & PCB						
ALPHA BHC (NG/L)		DET'N LIMIT = 1.000		GUIDELINE = 700 (G)		
JAN	.	2.000 <T	.	2.000 <T	.	.
FEB	.	IIS	.	2.000 <T	.	.
MAR	.	9.000 <T	.	3.000 <T	.	.
APR	.	BDL	.	BDL	.	.
MAY	.	4.000 <T	.	3.000 <T	.	.
JUN	.	3.000 <T	.	3.000 <T	.	.
JUL	.	BDL	.	2.000 <T	.	.
AUG	.	3.000 <T	.	2.000 <T	.	.
OCT	.	1.000 <T	.	.	.	2.000 <T
NOV	.	2.000 <T	.	.	.	2.000 <T
LINDANE (NG/L)		DET'N LIMIT = 1.000		GUIDELINE = 4000 (A1)		
JAN	.	1.000 <T	.	BDL	.	.
FEB	.	IIS	.	BDL	.	.
MAR	.	2.000 <T	.	1.000 <T	.	.
APR	.	BDL	.	BDL	.	.
MAY	.	BDL	.	BDL	.	.
JUN	.	BDL	.	BDL	.	.
JUL	.	BDL	.	BDL	.	.
AUG	.	1.000 <T	.	BDL	.	.
OCT	.	BDL	.	.	.	BDL
NOV	.	BDL	.	.	.	BDL

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
VOLATILES						
TOLUENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 24.0 (B4)		
MAR	.	BDL	.	BDL	.	.
APR	.	.100 <T	.	BDL	.	.
MAY	.	BDL	.	.100 UCS	.	.
JUN	.	.	.	.050 <T	.	.
JUL	.	BDL	.	BDL	.	.
AUG	.	BDL	.	BDL	.	.
OCT	.	BDL	.	.	.	BDL
NOV	.	.050 <T	.	.	.	.050 <T
ETHYLBENZENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 2.4 (B4)		
MAR	.	ITX	.	ITX	.	.
APR	.	.050 <T	.	BDL	.	.
MAY	.	.050 <T	.	.050 <T	.	.
JUN	.	.	.	BDL	.	.
JUL	.	.050 <T	.	.100 <T	.	.
AUG	.	BDL	.	BDL	.	.
OCT	.	BDL	.	.	.	BDL
NOV	.	.050 <T	.	.	.	.050 <T
STYRENE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 46.5 (D2)		
OCT	.	.300 <T	.	.	.	.300 <T
NOV	.	.150 <T	.	.	.	.300 <T
CHLOROFORM (UG/L)		DET'N LIMIT = .100		GUIDELINE = 350 (A1+)		
MAR	.	ITX	.	ITX	.	.
APR	.	52.800	.	48.900	.	.
MAY	.	58.300	.	41.300	.	.
JUN	.	.	.	44.000	.	.
JUL	.	48.700	.	45.300	.	.
AUG	.	42.500	.	48.800	.	.
OCT	.	51.100	.	.	.	44.200
NOV	.	45.900	.	.	.	51.800
DICHLOROBROMOMETHANE (UG/L)		DET'N LIMIT = .050		GUIDELINE = 350 (A1+)		
MAR	.	ITX	.	ITX	.	.
APR	.	4.700	.	4.400	.	.
MAY	.	5.000	.	4.700	.	.
JUN	.	.	.	4.350	.	.
JUL	.	5.000	.	4.200	.	.

TABLE 5

DRINKING WATER SURVEILLANCE PROGRAM NORTH BAY WTP 1988

	WATER TREATMENT PLANT				DISTRIBUTION SYSTEM	
SITE	SITE 1		SITE 2		SITE 3	
TYPE	STANDING	FREE FLOW	STANDING	FREE FLOW	STANDING	FREE FLOW
AUG	.	4.450	.	4.650	.	.
OCT	.	4.950	.	.	.	4.400
NOV	.	4.300	.	.	.	4.800
CHLORODIBROMOMETHANE (UG/L)		DET'N LIMIT = .100		GUIDELINE = 350 (A1+)		
MAR	.	!TX	.	!TX	.	.
APR	.	BDL	.	BDL	.	.
MAY	.	.100 <T	.	BDL	.	.
JUN	.	.	.	.200 <T	.	.
JUL	.	.300 <T	.	.200 <T	.	.
AUG	.	.200 <T	.	.300 <T	.	.
OCT	.	.400 <T	.	.	.	.300 <T
NOV	.	.200 <T	.	.	.	.500 <T
BROMOFORM (UG/L)		DET'N LIMIT = .200		GUIDELINE = 350 (A1+)		
MAR	.	BDL	.	BDL	.	.
APR	.	BDL	.	BDL	.	.
MAY	.	BDL	.	BDL	.	.
JUN	.	.	.	BDL	.	.
JUL	.	BDL	.	BDL	.	.
AUG	.	BDL	.	BDL	.	.
OCT	.	BDL	.	.	.	BDL
NOV	.	BDL	.	.	.	BDL
TOTL TRIHALOMETHANES (UG/L)		DET'N LIMIT = .500		GUIDELINE = 350 (A1)		
MAR	.	!TX	.	!TX	.	.
APR	.	57.500	.	53.300	.	.
MAY	.	63.400	.	46.000	.	.
JUN	.	.	.	48.550	.	.
JUL	.	54.000	.	49.700	.	.
AUG	.	47.150	.	53.750	.	.
OCT	.	56.450	.	.	.	48.900
NOV	.	50.400	.	.	.	57.100

Table VI

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
BACTERIOLOGICAL			
STANDARD PLATE COUNT MEMBRANE FILTRATION	CT/ML	0	500/ML(A1)
P/A BOTTLE		0	0 (A1*)
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100mL(A1)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A
CHLOROAROMATICS			
HEXACHLOROBUTADIENE	NG/L	1.000	450. (D4)
1,2,3-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,3,4-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,3,5-TETRACHLOROBENZENE	NG/L	1.000	10000 (I)
1,2,4-TRICHLOROBENZENE	NG/L	5.000	10000 (I)
1,2,4,5-TETRACHLOROBENZENE	NG/L	1.000	38000 (D4)
1,3,5-TRICHLOROBENZENE	NG/L	5.000	10000 (D4)
HEXACHLOROBENZENE	NG/L	1.0	10. (C1)
HEXACHLOROETHANE	NG/L	1.000	1900. (D4)
OCTACHLOROSTYRENE	NG/L	1.000	N/A
PENTACHLOROBENZENE	NG/L	1.000	74000 (D4)
2,3,6-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,4,5-TRICHLOROTOLUENE	NG/L	5.000	N/A
2,6,A-TRICHLOROTOLUENE	NG/L	5.000	N/A
CHLOROPHENOLS			
2,3,4-TRICHLOROPHENOL	NG/L	50.	N/A
2,3,4,5-TETRACHLOROPHENOL	NG/L	50.	N/A
2,3,5,6-TETRACHLOROPHENOL	NG/L	50.	N/A
2,4,5-TRICHLOROPHENOL	NG/L	50.	2600000 (D4)
2,4,6-TRICHLOROPHENOL	NG/L	50.	5000. (B1)
PENTACHLOROPHENOL	NG/L	50.	60000. (B1)
CHEMISTRY (FLD)			
FIELD COMBINED CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD FREE CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD TOTAL CHLORINE RESIDUAL	MG/L	N/A	N/A
FIELD PH	DMSNLESS	N/A	6.5-8.5(A4)
FIELD TEMPERATURE	^{o}C	N/A	<15 ^{o}C(A1)
FIELD TURBIDITY	FTU	N/A	1.0 (A1)
CHEMISTRY (LAB)			
ALKALINITY	MG/L	.200	30-500(A4)
CALCIUM	MG/L	.100	100. (F2)
CYANIDE	MG/L	.001	.20(A1)
CHLORIDE	MG/L	.200	250. (A3)
COLOUR	TCU	.5	5.0 (A3)
CONDUCTIVITY	UMHO/CM	1.	400. (F2)
FLUORIDE	MG/L	.01	2.4 (A1)
HARDNESS	MG/L	.50	80-100(A4)
MAGNESIUM	MG/L	.05	30. (F2)
SODIUM	MG/L	.20	200. (C3)
AMMONIUM TOTAL	MG/L	.002	.05(F2)
NITRITE	MG/L	.001	1.0 (A1)
TOTAL NITRATES	MG/L	.02	10. (A1)
NITROGEN TOTAL KJELDAHL	MG/L	.02	N/A
PH	DMSNLESS	N/A	6.5-8.5(A4)
PHOSPHORUS FIL REACT	MG/L	.0005	N/A
PHOSPHORUS TOTAL	MG/L	.002	.40(F2)
TOTAL SOLIDS	MG/L	1.	500. (A3)
TURBIDITY	FTU	.02	1.0 (A1)
METALS			

BORON	UG/L	.200	5000.	(A1)

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
BERYLLIUM	UG/L	.010	0.20	(H)
CADMIUM	UG/L	.050	5.0	(A1)
COBALT	UG/L	.020	1000.	(H)
CHROMIUM	UG/L	.100	50.	(A1)
COPPER	UG/L	.100	1000.	(A3)
IRON	UG/L	4.0	300.	(A3)
MERCURY	UG/L	.01	1.0	(A1)
MANGANESE	UG/L	.050	50.	(A3)
MOLYBDENUM	UG/L	.020	500.	(H)
NICKEL	UG/L	.100	50.	(F3)
LEAD	UG/L	.050	50.	(A1)
SELENIUM	UG/L	.200	10.	(A1)
SILVER	UG/L	.020	50.	(A1)
STRONTIUM	UG/L	.050	2000.	(H)
THALLIUM	UG/L	.010	13.	(D4)
TITANIUM	UG/L	.050	N/A	
URANIUM	UG/L	.020	20.	(A2)
VANADIUM	UG/L	.050	100.	(H)
ZINC	UG/L	.020	500.	(A3)
PHENOLICS				
PHENOLICS (UNFILTERED REACTIVE)	UG/L	.2	2.0	(A3)
PESTICIDES & PCB				
ALDRIN	NG/L	1.0	700.	(A1)
AMETRINE	NG/L	50.	300000.	(D3)
ATRAZINE	NG/L	50.	60000.	(B3)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	700.	(G)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300.	(G)
GAMMA HEXACHLOROCYCLOHEXANE(LINDANE)	NG/L	1.0	4000.	(A1)
ALPHA CHLORDANE	NG/L	2.0	7000.	(A1)
GAMMA CHLORDANE	NG/L	2.0	7000.	(A1)
BLADEX	NG/L	100.	10000.	(B3)
DIELDRIN	NG/L	2.0	700.	(A1)
METHOXYCHLOR	NG/L	5.0	100000.	(A1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000.	(D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	4.0	74000.	(D4)
ENDRIN	NG/L	4.0	200.	(A1)
ENDOSULFAN SULPHATE(THIODAN SULPHATE)	NG/L	4.0	N/A	
HEPTACHLOR EPOXIDE	NG/L	1.0	3000.	(A1)
HEPTACHLOR	NG/L	1.0	3000.	(A1)
METOLACHLOR	NG/L	500.	50000.	(B3)
MIREX	NG/L	5.0	N/A	
OXYCHLORDANE	NG/L	2.0	N/A	
O,P-DDT	NG/L	5.0	30000.	(A1)
PCB	NG/L	20.0	3000.	(A2)
O,P-DDD	NG/L	5.0	N/A	
PPDDE	NG/L	1.0	30000.	(A1)
PPDDT	NG/L	5.0	30000.	(A1)
ATRATONE	NG/L	50.	N/A	
ALACHLOR	NG/L	500.	35000.	(D2)
PROMETONE	NG/L	50.	52500.	(D3)
PROPAZINE	NG/L	50.	16000.	(D2)
PROMETRYNE	NG/L	50.	1000.	(B3)
SENCOR (METRIBUZIN)	NG/L	100.	80000.	(B2)
SIMAZINE	NG/L	50.	10000.	(B3)
POLYAROMATIC HYDROCARBONS				
PHENANTHRENE	NG/L	10.0	N/A	
ANTHRACENE	NG/L	1.0	N/A	
FLUORANTHENE	NG/L	20.0	42000.	(D4)
PYRENE	NG/L	20.0	N/A	
BENZO(A)ANTHRACENE	NG/L	20.0	N/A	
CHRYSENE	NG/L	50.0	N/A	
DIMETHYL BENZO(A)ANTHRACENE	NG/L	5.0	N/A	
BENZO(E)PYRENE	NG/L	50.0	N/A	
BENZO(B)FLUORANTHENE	NG/L	10.0	N/A	
PERYLENE	NG/L	10.0	N/A	
BENZO(K)FLUORANTHENE	NG/L	1.0	N/A	
BENZO(A)PYRENE	NG/L	5.0	10.	(B1)

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE	
BENZO(G,H,I)PERYLENE	NG/L	20.0	N/A	
DIBENZO(A,H)ANTHRACENE	NG/L	10.0	N/A	
INDENO(1,2,3-C,D)PYRENE	NG/L	20.0	N/A	
BENZO(B)CHRYSENE	NG/L	2.0	N/A	
CORONENE	NG/L	10.0	N/A	
SPECIFIC PESTICIDES				
TOXAPHENE	NG/L	N/A	5000.	(A1)
2,4,5-TRICHLOROBUTYRIC ACID (2,4,5-T)	NG/L	50.	280000.	(B1)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000.	(A1)
2,4-DICHLORORPHENOXYBUTYRIC ACID	NG/L	200.	18000.	(B3)
2,4-D PROPIONIC ACID	NG/L	100.	N/A	
DICAMBA	NG/L	100.	87000.	(B3)
PICHLORAM	NG/L	100.	2450000.	(D3)
SILVEX (2,4,5-TP)	NG/L	50.	10000.	(A1)
DIAZINON	NG/L	20.	14000.	(A1)
DICHLOROVOS	NG/L	20.	N/A	
DURSBAN	NG/L	20.	N/A	
ETHION	NG/L	20.	35000.	(G)
GUTHION	NG/L	N/A	N/A	
MALATHION	NG/L	20.	160000.	(G)
MEVINPHOS	NG/L	20.	N/A	
METHYL PARATHION	NG/L	50.	7000.	(B3)
METHYLTRITHION	NG/L	20.	N/A	
PARATHION	NG/L	20.	35000.	(B1)
PHORATE (THIMET)	NG/L	20.	35.	(D2)
RELDAN	NG/L	20.	N/A	
RONNEL	NG/L	20.	N/A	
AMINOCARB	NG/L	N/A	N/A	
BENOMYL	NG/L	N/A	N/A	
BUX (METALKAMATE)	NG/L	2000.	N/A	
CARBOFURAN	NG/L	2000.	18000.	(D3)
CICP (CHLORPROPHAM)	NG/L	2000.	350000.	(G)
DIALLATE	NG/L	2000.	30000.	(H)
EPTAM	NG/L	2000.	N/A	
IPC	NG/L	2000.	N/A	
PROPOXUR (BAYGON)	NG/L	2000.	90000.	(G)
SEVIN (CARBARYL)	NG/L	200.	70000.	(A1)
SUTAN (BUTYLATE)	NG/L	2000.	245000.	(D3)
VOLATILES				
BENZENE	UG/L	.050	5.0	(B1)
TOLUENE	UG/L	.050	24.0	(B4)
ETHYLBENZENE	UG/L	.050	2.4	(B4)
PARA-XYLENE	UG/L	.100	300.	(B4)
META-XYLENE	UG/L	.100	300.	(B4)
ORTHO-XYLENE	UG/L	.050	300.	(B4)
1,1-DICHLOROETHYLENE	UG/L	.100	7.0	(D1)
ETHLYENE DIBROMIDE	UG/L	.05	50.	(G)
METHYLENE CHLORIDE	UG/L	.500	1750.	(D3)
TRANS-1,2-DICHLOROETHYLENE	UG/L	.100	350.	(D3)
1,1-DICHLOROETHANE	UG/L	.100	N/A	
CHLOROFORM	UG/L	.100	350.	(A1+)
1,1,1-TRICHLOROETHANE	UG/L	.020	200.	(D1)
1,2-DICHLOROETHANE	UG/L	.050	5.0	(D1)
CARBON TETRACHLORIDE	UG/L	.200	5.0	(D1)
1,2-DICHLOROPROPANE	UG/L	.050	10.0	(G)
TRICHLOROETHYLENE	UG/L	.100	5.0	(D1)
DICHLOROBROMOMETHANE	UG/L	.050	350.	(A1+)
1,1,2-TRICHLOROETHANE	UG/L	.050	.60	(D4)
CHLORODIBROMOMETHANE	UG/L	.100	350.	(A1+)
TETRACHLOROETHYLENE	UG/L	.050	10.0	(C2)
BROMOFORM	UG/L	.200	350.	(A1+)
1,1,2,2-TETRACHLOROETHANE	UG/L	.050	0.17	(D4)
CHLOROBENZENE	UG/L	.100	1510.	(D3)
1,4-DICHLOROBENZENE	UG/L	.100	5.0	(B1)
1,3-DICHLOROBENZENE	UG/L	.100	130.	(G)
1,2-DICHLOROBENZENE	UG/L	.050	200.	(B1)
TRIFLUOROCHLOROTOLUENE	UG/L	.100	N/A	
TOTAL TRIHALOMETHANES	UG/L	.500	350.	(A1)
STYRENE	UG/L	.05	46.5	(D2)